Lesson Overview

After identifying the chemicals that could pose a threat to your jurisdiction and analyzing your jurisdiction's vulnerability, you will need to analyze the overall risk and determine which areas require the most immediate response should an incident occur.

At the end of this lesson, you should be able to establish response priorities for your jurisdiction's highest-risk, highest-impact incidents.

Analyzing Risk

The method used to establish response priorities is called **risk analysis.** Risk analysis provides a basis to judge the relative probability or likelihood of a release and the severity of the consequences to humans.

Risk can be quantified in words—catastrophic, critical, limited, or negligible—or by assigning numbers such as 1 representing the highest risk and 4 representing little or no risk.

Risk is determined after evaluating all of the information generated by the vulnerability analysis.

Steps in Risk Analysis

Risk analysis involves four steps:

1. Develop a Risk Index.
2. Develop Response Priorities.
3. Create and Apply Scenarios.
4. Rank the Incidents.

Each of these steps will be described in this lesson, and when you finish, you will have a list of the areas that are most critical for response.

Step 1: Develop a Risk Index

Developing a risk index involves assessing risk-related factors in and around the jurisdiction to develop a composite picture of the overall risk. A risk index may be descriptive or numeric and should be developed based on a combination of:

- Frequency.
- Magnitude.
- Potential severity.

A worksheet or database can help you organize these data.

Assigning Risk Ratings

Using all data collected, assign a risk rating for each factor for each incident. Ratings should quantify the factor, to the degree possible.

Risk ratings generally follow the model shown below.

1. Catastrophic
2. Critical
3. Limited
4. Negligible

Step 2: Develop Response Priorities

Based on the severity ratings assigned, develop response priorities. Response priorities generally follow the hierarchy shown below.

- **Priority 1:** Critical facilities, such as fire halls, precinct houses, and hospitals
- **Priority 2:** Life safety, including hazard areas, high-risk populations, and potential search and rescue operations
- **Priority 3:** Critical infrastructure, such as utilities, communication, and transportation systems

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Step 3: Create and Apply Scenarios

After developing initial response priorities, it is useful to develop assumptions and apply realistic but worst-case scenarios to each. Applying scenarios will help you verify your perception of the risk. HazMat scenarios can be developed based on:

- Release of the maximum quantity of the largest vessel.
- Total quantity released within a short timeframe.
- Strong winds or other severe weather conditions.
- Terrain features.
- Location, time or day, and other factors.

After analyzing each scenario, revise response priorities, if needed.

Step 4: Ranking the Incidents

Finally, assign a ranking to each incident. The ranking should quantify, to the degree possible, the damage that can be expected if an incident involving that hazard occurs. The final ranking will establish the jurisdiction's planning priorities.

Lesson Summary

Establishing response priorities is based on overall risk and involves four steps:

1. Developing a Risk Index.
2. Developing Response Priorities.
3. Creating and Applying Scenarios.
4. Ranking the Incidents.

Based on the response priorities, you should be able to focus your HazMat planning on the incidents that present this highest overall risk to your jurisdiction.